

**Contract No. HY/2011/09**  
**Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road**  
**– Section between HKSAR Boundary and Scenic Hill**






## Technical Document

**Document Ref. No.:**

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Project Code				Issuer Code				Doc. Code				Sequential Number				Rev.				

**Document Title:**

**Regular Marine Travel Routes Plan**

	PREPARED BY:	INTERNAL REVIEW:			INTERNAL APPROVAL
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<b>DATE</b>	4/3/2014	4.3.2014	4/3/2014	4.3.2014	4.3.2014



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## 2.0 DOCUMENT STATUS

### 2.1 Details of Revision:

Rev.	Rev. Date	Sections	Amendment Source and/or Details
A	26/10/2012	All	For the first submission to the SOR.
B	1/11/2012	All	Incorporated the IEC/ENPO's comments and amended text where necessary.
C	4/2/2013	Section 4.3 & 4.4	Incorporated the IEC/ENPO's comments and amended text where necessary.
D	21/2/2013	Section 4.3 Figure 4	Added a paragraph for routes records management. Amended a travel route to avoid dolphin hotspots above The Brothers.
E	25/4/2013	Section 4.2, Figure 2, 7 & 8	Incorporated comments from the SOR Response Ref No. 214487/(HY/2011/09)/M45/160/B1221.
F	16/5/2013	Section 4.2, 4.3, Figure 2, 6 & 7	Incorporated comments from the IEC Response via email on 7 May 2013.
G	20/6/2013	Section 4.5, Figure 2 & 7	Incorporated comments from the IEC Response via email on 4 June 2013.
H	20/8/2013	Section 4.2, Figure 7	Updated the allocation of sediment disposal facilities to suit the requirements listed in the newly granted DASO permit.
I	9/1/2013	Sections 3.1, 4.2, 4.3 & Figure 9	Updated the allocation of sediment disposal facilities to suit the requirements listed in the newly granted DASO permit and Mainland Dumping Permit.
J	18/2/2014	Page 7 Section 4.2 & Figure 5b	Updated the photos of Jack-up and Ro Ro Barge. Added the route for delivery of precast pile cap shell from Panyu to work sites.



### **3.0 INTRODUCTION**

#### **3.1 Purpose**

The Regular Marine Travel Routes Plan (the Plan) has been prepared in accordance with Condition 2.9 of the Environmental Permit (EP-352/2009/C) for the Highways Department Contract namely Contract No. HY/2011/09 – Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill.

The Plan describes the routes taken by the contractor's vessels moving to and from work areas, to minimize risk of collision with the Chinese White Dolphins (CWD) during the construction period. It also presents appropriate controlling measures on the marine traffic to minimize impacts on the CWD.

#### **3.2 Contract Description**

Highways Department commissioned the contract "Hong Kong Link Road- Section between HKSAR Boundary and Scenic Hill" (hereinafter called the Contract) with Contract No: HY/2011/09. Dragages -China Harbour-VSL Joint Venture (DCVJV) is awarded to undertake this Contract. The scope of the contract works comprises the following major items:

- (i) a dual 3-lane carriageway in the form of viaduct from the HKSAR boundary (connecting with the HZMB Main Bridge) to the Scenic Hill (connecting with the tunnel under separate Contract No. HY/2011/03), of approximately 9.4km in length with a hard shoulder for each bound of carriageway and a utilities trough on the outer edge of each bound of viaducts;
- (ii) a grade-separated turnaround facility located near San Shek Wan, composed of slip roads in the form of viaduct with single-lane carriageway bifurcated from the HKLR mainline with an elevated junction above the mainline;
- (iii) provision of ancillary facilities including, but not limited to, meteorological enhancement measures including the provisioning of anemometers and modification of the wind profiler station at hillside of Sha Lo Wan, provisioning of a compensatory marine radar, and provisioning of security systems; and
- (iv) associated civil, structural, geotechnical, marine, environmental protection, landscaping, drainage and highways electrical and mechanical (E&M) works, street lightings, traffic aids and sign gantries, marine navigational aids, ship impact protection system, water mains and fire hydrants, lightning protection system, structural health monitoring and maintenance management system (SHM&MMS), supervisory control and data acquisition (SCADA) system, as well as operation and maintenance provisions of viaducts, provisioning of facilities for installation of traffic control and surveillance system (TCSS), provisioning of facilities for installation of telecommunication cables/equipments and re provisioning works of affected existing facilities/utilities.

Cinotech Consultants Limited was commissioned by the DCVJV to undertake the EM&A works for the contract and was appointed as the Environmental Team (ET).

#### 4.0 DESIGN OF REGULAR MARINE TRAVEL ROUTES

##### 4.1 Types of Working Vessels

In line with the works progress and serving for different purposes, the following vessels will be used during the construction stage.

- (i) Derrick Lighter – 2000 ton



Vessel Details:-

LOA: 42m

Beam: 15m

Airdraft: 38m

Vessel Particular for Platform Erection & Piling Work

- (ii) Flat Top Barge – 2000 ton



Vessel Details:-

LOA: 50m

Beam: 15.2m

Airdraft: Max. 15m

Vessel Particular for Platform Erection & Piling Work



(iii) Hopper Barge – 1,000m<sup>3</sup>



Details:-

LOA: 47 m

Beam: 8 m

Airdraft: Max. 12m

Vessel Particular for Piling Work

(iv) Floating Concrete Batching Plant – Hang Gong Tong 1602



Details:-

LOA: 76 m

Beam: 23 m

Airdraft: Max. 30m

Vessel Particular for Piling Work



(v) Jack-up



Vessel Particular for Marine GI Work

(vi) Tug Boat



Vessel Particular for Marine Work

(vii) Ro Ro Barge



Vessel Particular for Concrete Delivery

(viii) Connection Boat



Vessel Particular for General Usage and Passengers

#### 4.2 **Regular Marine Travel Routes**

The existing fairways, including North West Siu A Chau, North Cheung Chau, Western Fairway, Ma Wan Fairway and Kap Shui Mun Fairway will be followed and selected as the major marine travel routes. The Existing Fairway Plan is shown in Figure 1. All the regular routes for working vessels would not go through the dolphin hotspot in Brothers Islands.

The working vessels, i.e. Derrick Lighter, Flat Top, Concrete Batching Plant, Jack-up and Tug Boat, will mainly stay and work along the Works Area at the airport channel and Western Areas. Besides, the South East Quay of the airport island will later develop into the loading and unloading area for construction materials such as ready mixed concrete. The marine routes and works area is illustrated in Figure 2.

During the inclement weather, the working vessels will go to Tuen Mun Typhoon Shelter, Yau Ma Tei Typhoon Shelter or Hei Ling Chau Typhoon Shelter. Please refer to Figure 3 for the marine route.

For disposal of inert materials, DCVJV will deliver the materials to the neighbouring sites of Contracts HY/2010/02 HKBCF Reclamation and HY/2011/03 HZMB Section from Scenic Hill to HKBCF for filling purposes, as the preferred disposal grounds as stipulated in the Contract. Upon the inert waste has been excavated, Hopper Barge will be used to deliver the inert waste. The Marine Route is illustrated in Figure 4.

The precast and prefabricated units will be delivered to Hong Kong from Prefabricated Yard in Xinhui, Guangdong. Please refer to Figure 5a for the detailed marine routing. While the precast pile cap shell will be delivered to Hong Kong from Precast Yard in Panyu, Guangdong, and the barge will first anchor at the immigration anchorage area for immigration check, then deliver the precast shell to the site area directly. The Marine Route is shown in Figure 5b.

The inspection boats will be employed for general usage and passengers travelling to and from different works area, namely WA6, WA4 and WA7. The marine route is shown in Figure 6.

Upon the receipt of DASO permit and approval of Construction Waste Disposal Account, the excavated marine sediment, inert C&D waste, slurry and bentonite will be disposed of to the following locations:-

1. East Sha Chau Contaminated Mud Disposal Site - Pit IVc or Va and South of the Brothers Contaminated Mud Disposal Site - CMP 1 for dredged sediment Type 1 Open Sea Disposal;
2. South of the Brothers Contaminated Mud Disposal Site – CMP1 for dredged sediment Type 1 - Open Sea Disposal (Dedicated Site) & dredged sediment Type 2 - Confined Marine Disposal;





3. Tuen Mun Area 38 Fill Bank for inert construction waste, excluding slurry and bentonite; and
4. Tseung Kwan O Area 137 Fill Bank for slurry and bentonite.

Hopper barges and tug boats are involved for the disposal. The relevant marine routes are shown in Figure 7 and Figure 8.

Starting from the year of 2014, the cross boundary disposal of marine sediment will be carried out. Figure 9 shows the location and the travelling routing of the designated sediment dump pit in mainland China.

#### 4.3 **Monitoring**

DCVJV will maintain records of the use of the inspection boats under control. Such records will include, inter alia, details, times and purpose of journeys. The person using the works boats authorizing the journey will be required to sign his name and title against the entries. DCVJV will present current log books for inspection by the SOR when so required. The following monitoring measures will be adopted.

- i. Barges for transporting public fill or sediment will be equipped with Automatic Identification System (AIS) for track logging of vessels.
- ii. Tug boats and hopper barges will be installed GPS System for the purposes of recording the marine travel route during operation.
- iii. Derrick lighters, flat top barges, floating concrete batching plants, jack-up platforms and Ro Ro barges will be steered by the tug boats which are installed with GPS. As such, their travel routes can be followed.
- iv. Administrative control will be taken, one route will be randomly selected and checked once a month.
- v. Front End Mobile Units (FEMUs) has been installed in the barges for disposing sediment in CEDD dump pits locally or the designated pit in mainland China.

DCVJV will search to deploy much suitable working fleets which are equipped with AIS or GPS as possible.

The daily record of marine travel route of offsite working fleets will be collected and filed by the supervising staff for inspection and monitoring purposes. Record shall be submitted upon SOR's request. Warning will be noticed to the captain and his shipping company or material suppliers if vessel track log showed the approved marine travel route is not followed.

All vessels used for the construction of the marine works will comply with all the relevant regulations and requirements of the Marine Department, including:-

- (a) The Shipping and Port Control Regulations (Cap.313A);
- (b) The Merchant Shipping (Miscellaneous Craft) Regulations (Cap.313F);
- (c) The Merchant Shipping (Safety) (Signals of Distress and Prevention of Collisions) Regulations (Cap.369N);
- (d) The Dangerous Goods (Shipping) Regulations (Cap 295C);
- (e) The Merchant Shipping (Launches and Ferry Vessels) Regulations (Cap 313E);
- (f) Merchant Shipping (Local Vessels) Ordinance (Cap.548);
- (g) Shipping and Port Control (Works) Ordinance (Cap.313X).

#### 4.4 **Precautionary Measures**

The main issue with the Chinese White Dolphin is a moving vessel striking and injuring an animal during the period of travel. Information regarding the locations of frequent sighting near the proposed vessel routes indicated that the following would also be needed to minimize the chance of a vessel striking a dolphin.

- (a) When entering into a distance of 250m from silt curtains of HY/2011/09 sites, all vessels will travel at a speed no greater than 5 knots, and at a speed no greater than 10 knots for a distance of at least 1.5km away. Vessels can then increase speed after that distance unless other restrictions apply.
- (b) If any dolphins are sighted within 250m of a vessel then the vessel will slow to a speed no greater than 5 knots for at least 3 minutes after the last sighting.



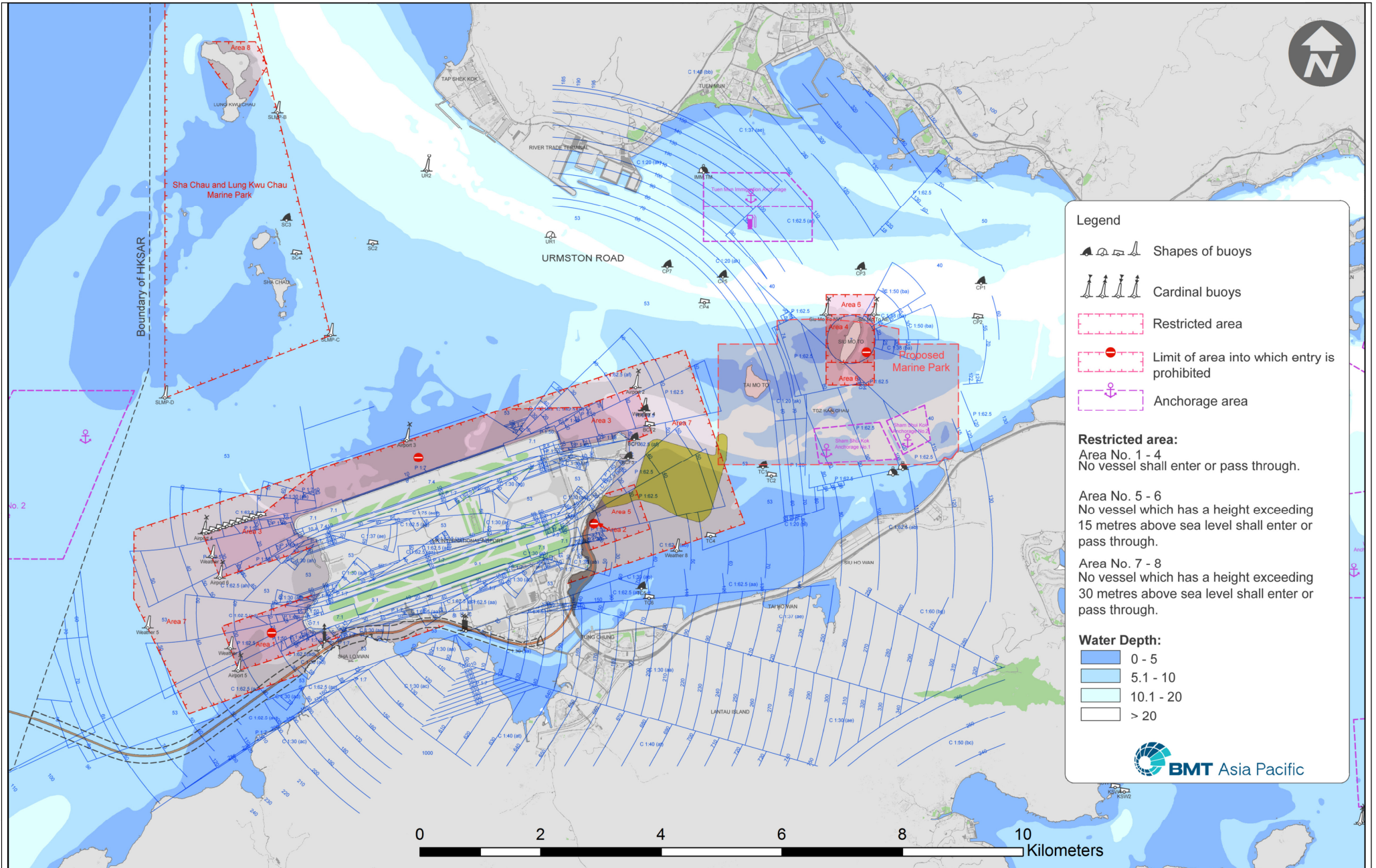
- (c) Barges for delivering will be selected as large sizes as possible to reduce the number of delivering trips.
- (d) Concerning the travelling route for fill materials to the HKLR03 site passing dolphin hotspots, it is agreed that prolonged marine travel route to be adopted – to go further east until pass over proposed marine park in Brothers Island and turn back to HKLR03. The speed will keep below 5 knots when crossing the edge of the proposed marine park. The travel route is illustrated in Figure 4.

#### 4.5 **Training**

Captains of all working vessels should be required to use regular travel routes, in order to minimize the chance of vessel collision.

Captains of construction vessels working in the West Lantau waters and near the Brothers Islands should undergo training to learn about local dolphins and porpoises. They should be trained to be aware of the protocol for “dolphin friendly” vessel operation. Reference will be made to Code of Conduct for Dolphin Watching Activities available from Agriculture, Fisheries and Conservation Department.

END OF TEXT



**Legend**

- Shapes of buoys
- Cardinal buoys
- Restricted area
- Limit of area into which entry is prohibited
- Anchorage area

**Restricted area:**

Area No. 1 - 4  
No vessel shall enter or pass through.

Area No. 5 - 6  
No vessel which has a height exceeding 15 metres above sea level shall enter or pass through.

Area No. 7 - 8  
No vessel which has a height exceeding 30 metres above sea level shall enter or pass through.

**Water Depth:**

- 0 - 5
- 5.1 - 10
- 10.1 - 20
- >20m depth color swatch"/> > 20

BMT Asia Pacific

Drawn By:	KMN
Checked By:	BJVJ
Approved By:	KMN
Date:	12/09/12
Checked:	KMN
Date:	12SEP2012

Joint Contractor:

Client:

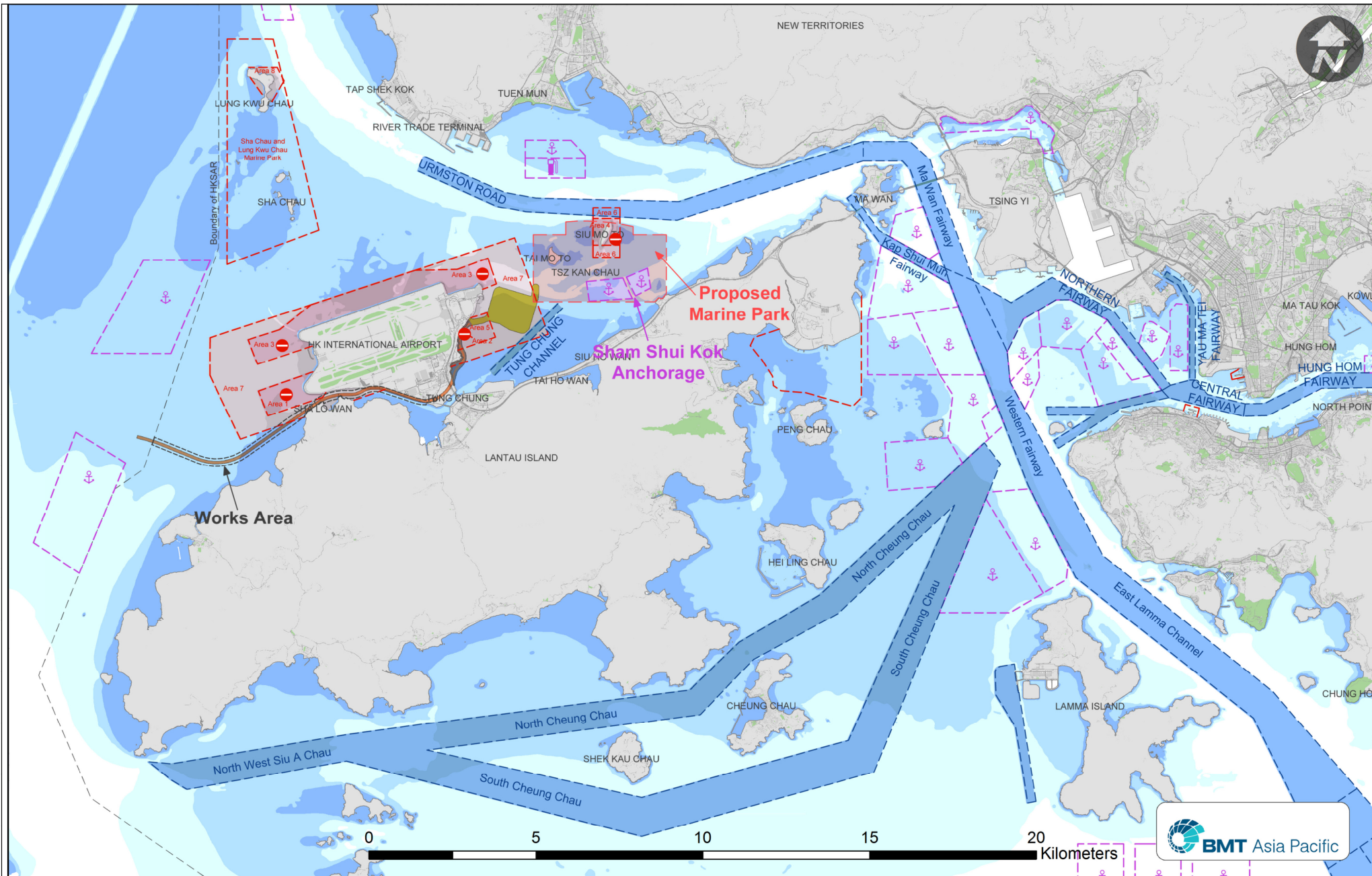
Contractor/Designer:

Contract No. HY/2011/09  
 Hong Kong - Zhuhai - Macao Bridge Hong Kong Link Road  
 Section Between HKSAR Boundary and Scenic Hill

**Figure 1: Existing Fairway Plan**

Drawing No.:	HKLR9/DCV/MD/PW/SI/026	
Scale:	N.T.S.	Sheet No. 1 OF 2
CAD FILE:	HKLR9_DCV_MD_PW_SL_026_0.dwg	
Job No.:	HY/2011/09	Rev. 0

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 Section Between HKSAR Boundary and Scenic Hill  
**Figure 1: Existing Fairway Plan**

Drawing No. HKLR9/DCV/MD/PW/SI/026	
Scale: N.T.S.	Sheet No. 2 OF 2
GEO FILE: HKLR9_DCV_MD_PW_SI_026_0.dwg	
Job No. HY/2011/09	Drawing Status: 0

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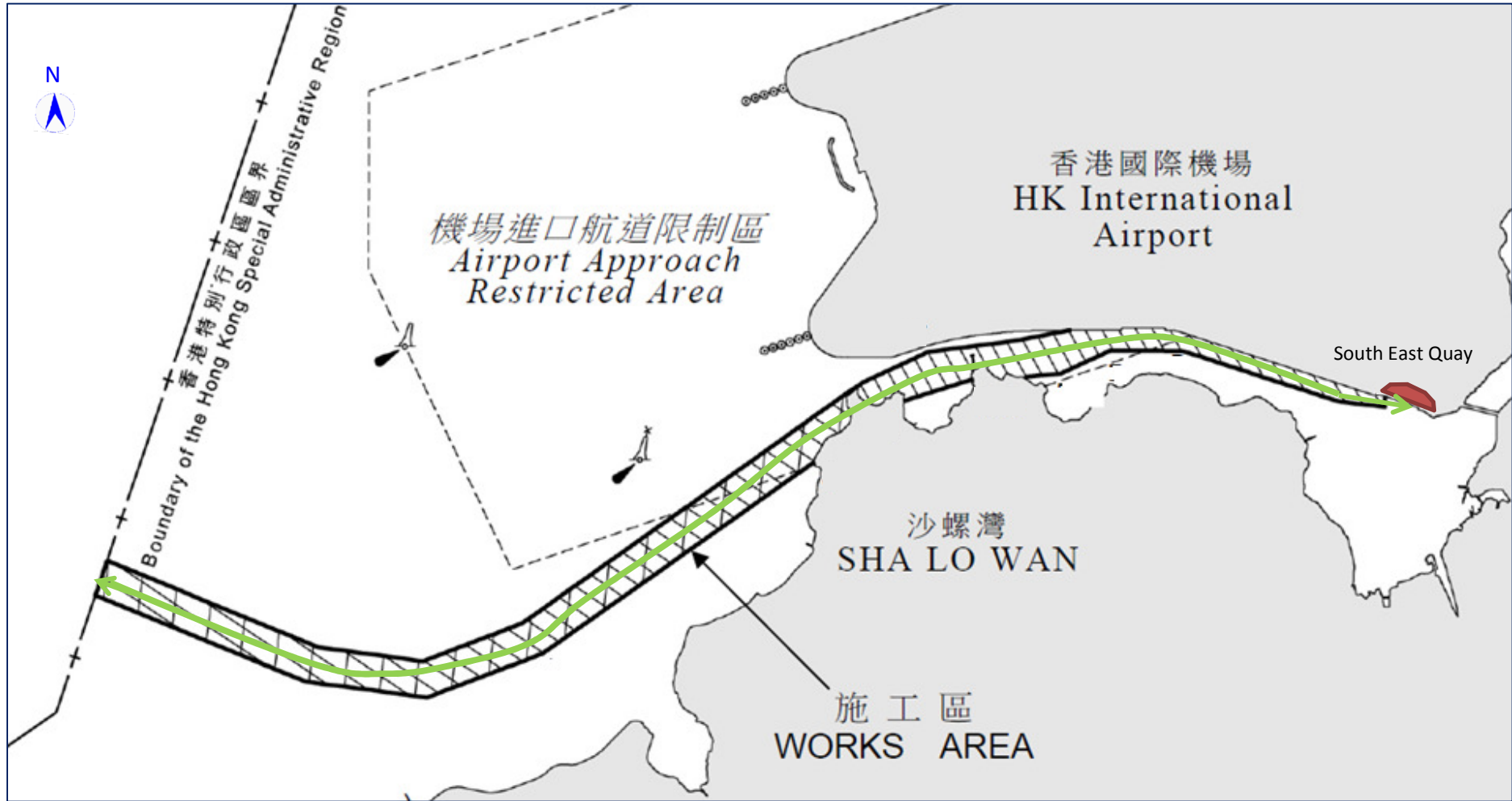
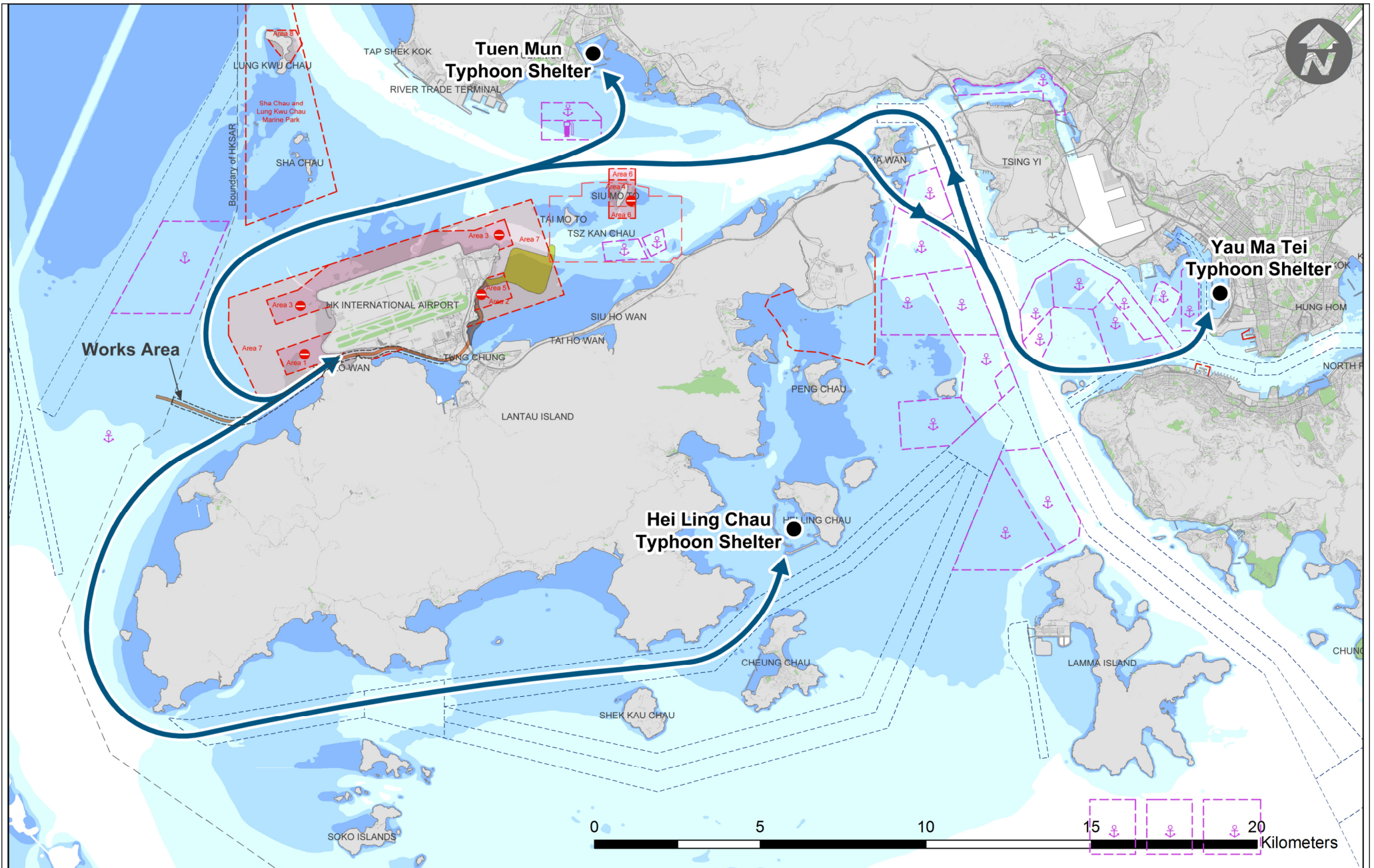


Figure 2: Marine Route and Works Area for the Working Vessels



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Main Contractor:

Client:

Contractor's Designer:

Contract No. HY/2011/09  
 Hong Kong - Zhuhai - Macao Bridge Hong Kong Link Road  
 Section Between HKSAR Boundary and Scenic Hill  
 Figure 3: Marine Route for the Working Vessels during Inclement Weather

Drawing No.	HKLR9/DCV/MD/PW/SI/031	
Scale:	N.T.S.	1 OF 1
CAO REF:	HKLR9_DCV_MD_PW_SI_031_0.dwg	
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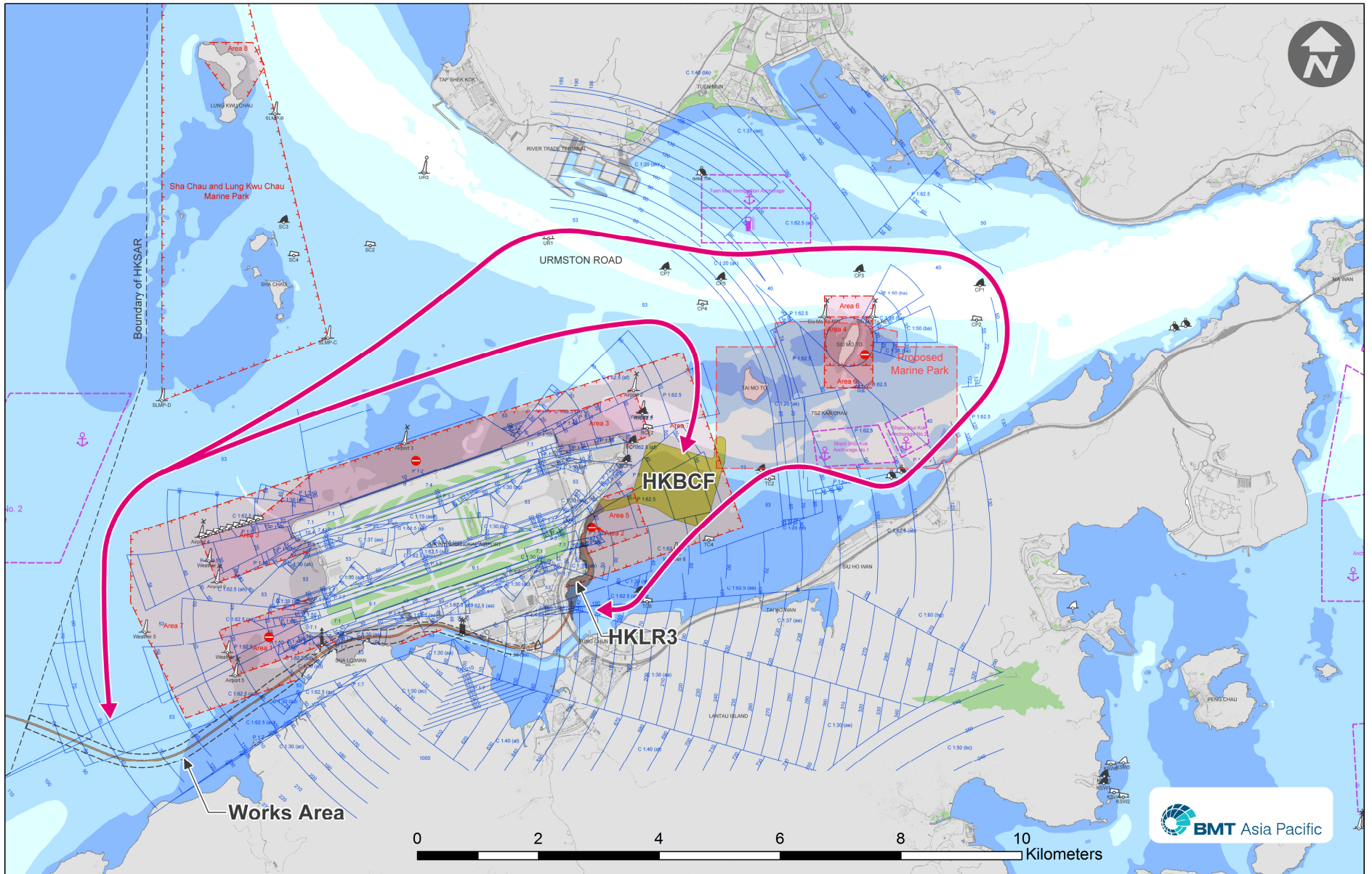
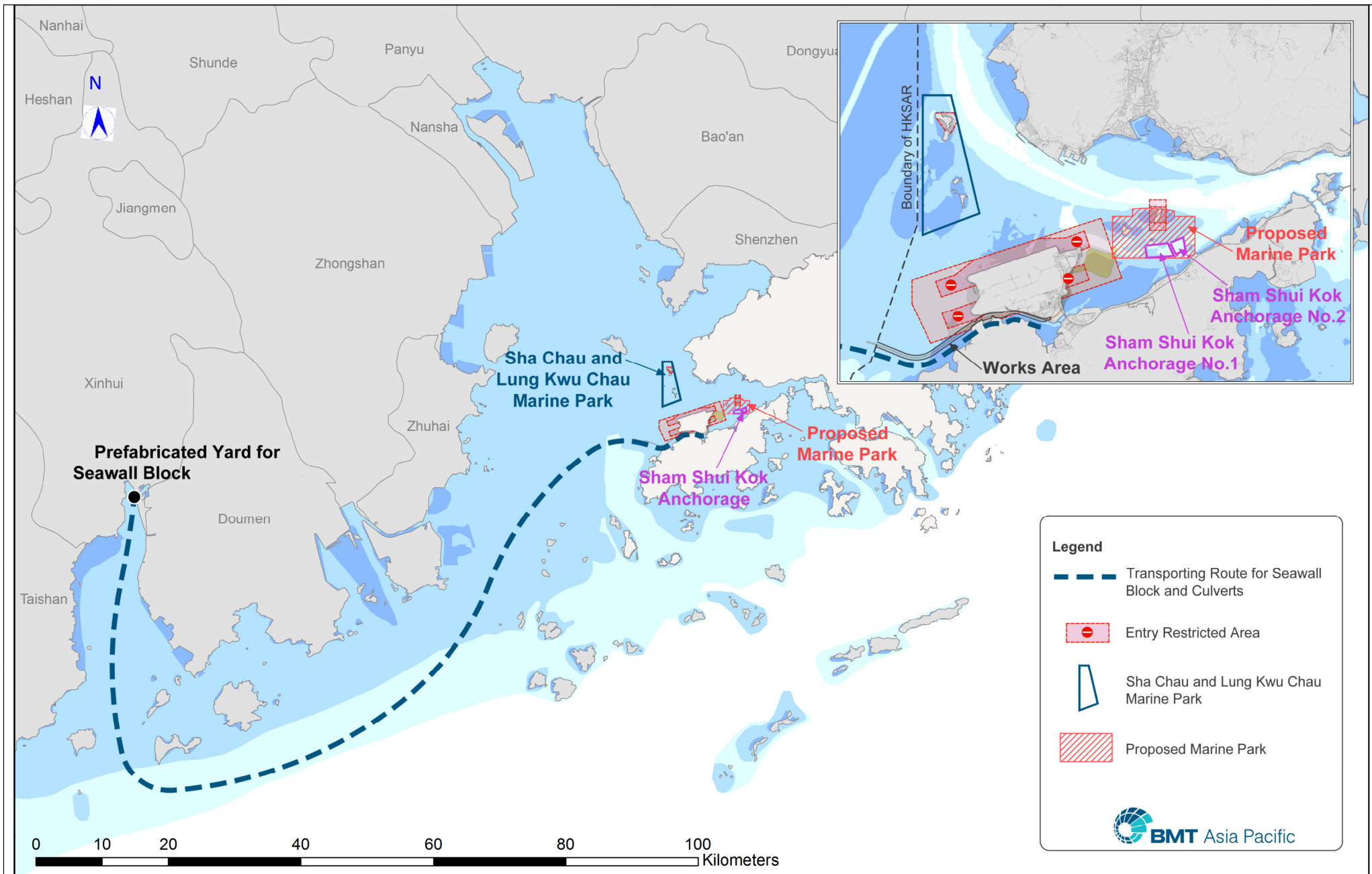


Figure 4: Marine Route for Fill Materials



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Contract No. HY/2011/09  
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**Figure 5: Marine Route for Precast and Prefabricated Units Delivery**

Drawing No.	HKLR9/DCV/MD/PW/SI/029	
Scale	N.T.S.	Sheet No. 1 OF 1
CAD FILE	HKLR9_DCV_MD_PW_SI_029_0.dwg	
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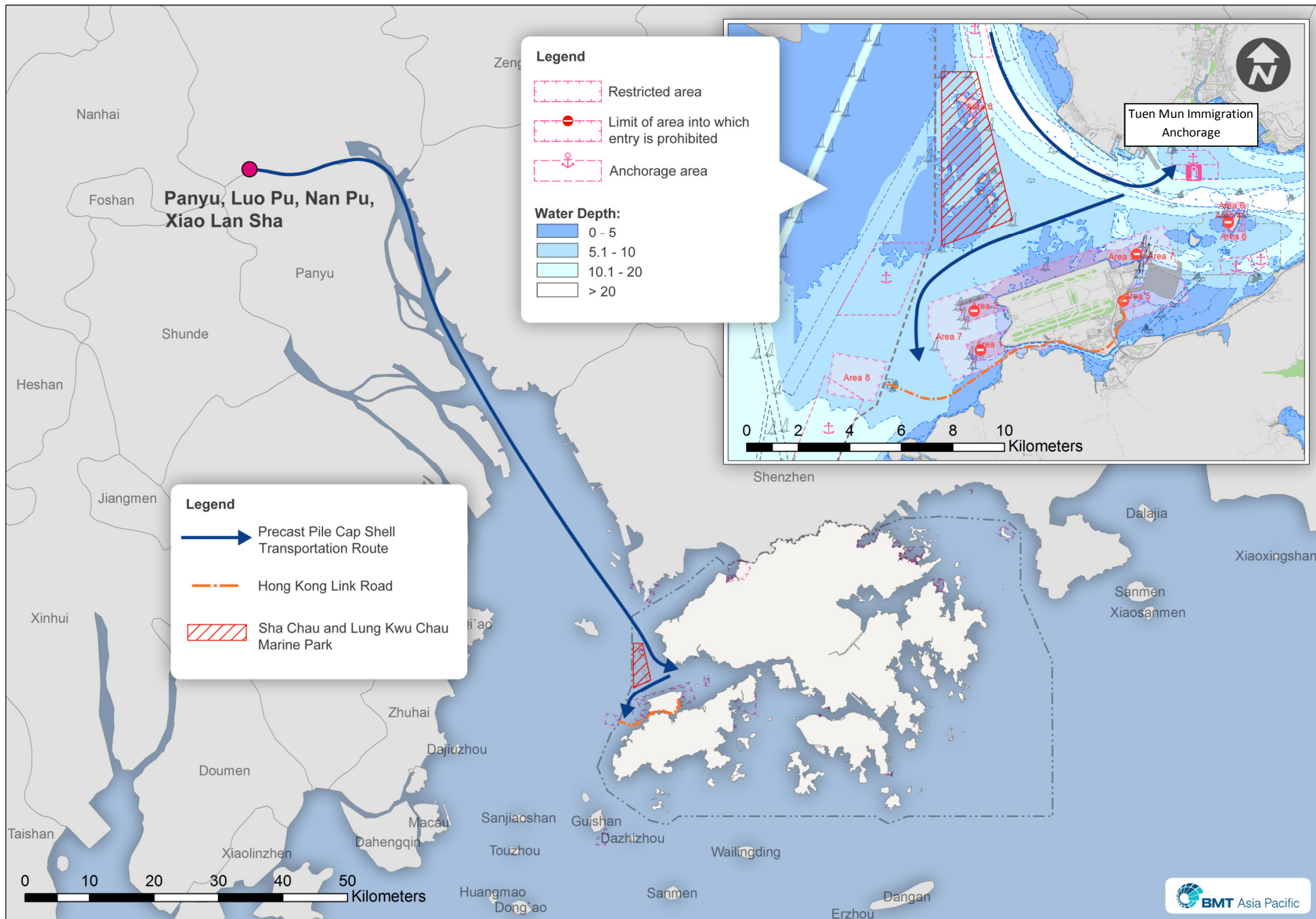
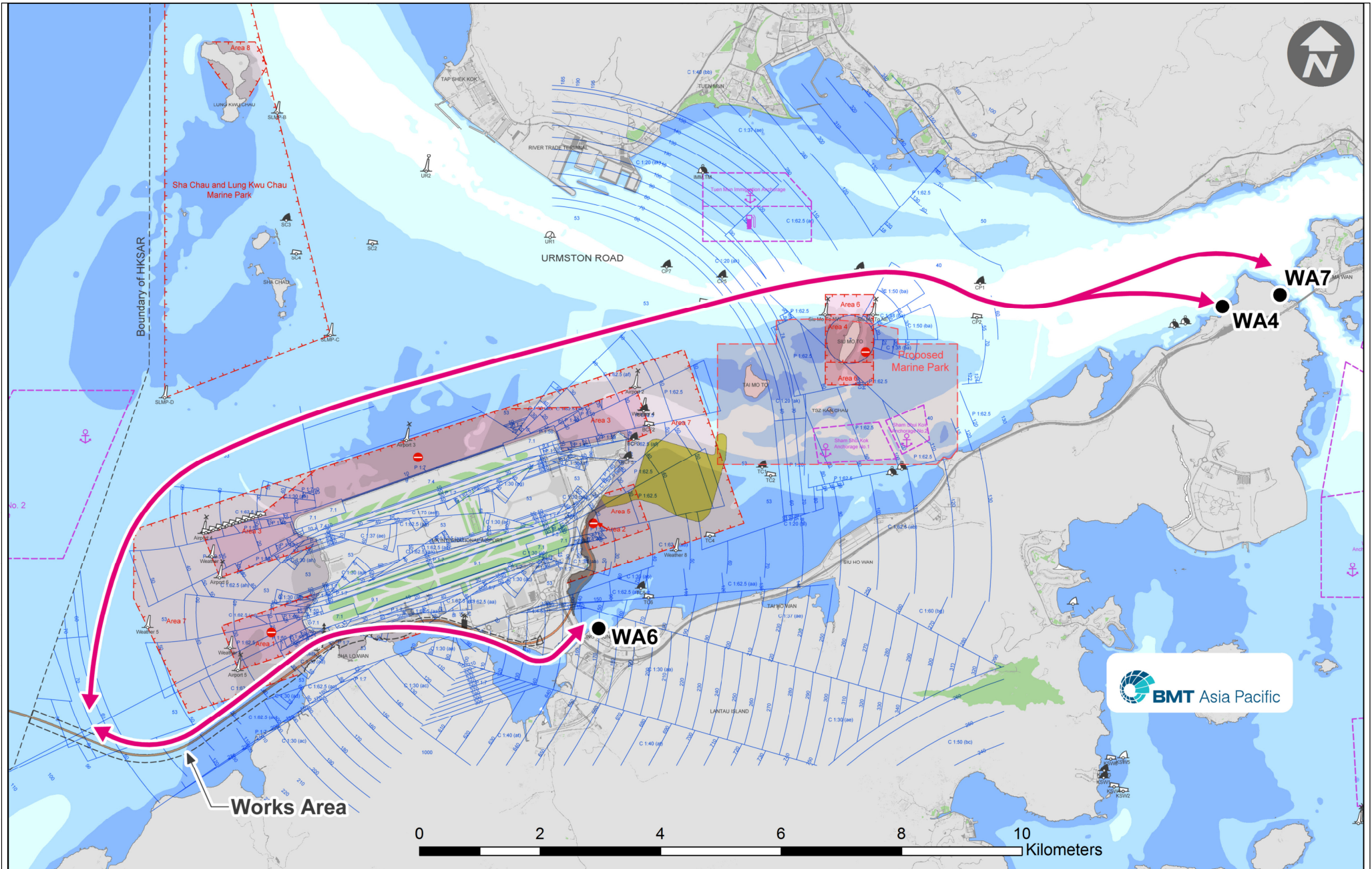


Figure 5b: Marine Routes for Delivery of Precast Pile Cap Shell



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0	FIRST ISSUE	12/09/12	KMN		
Rev.	Description	Date	Checked		

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**Figure 6: Marine Route for General Usage and Passenger**


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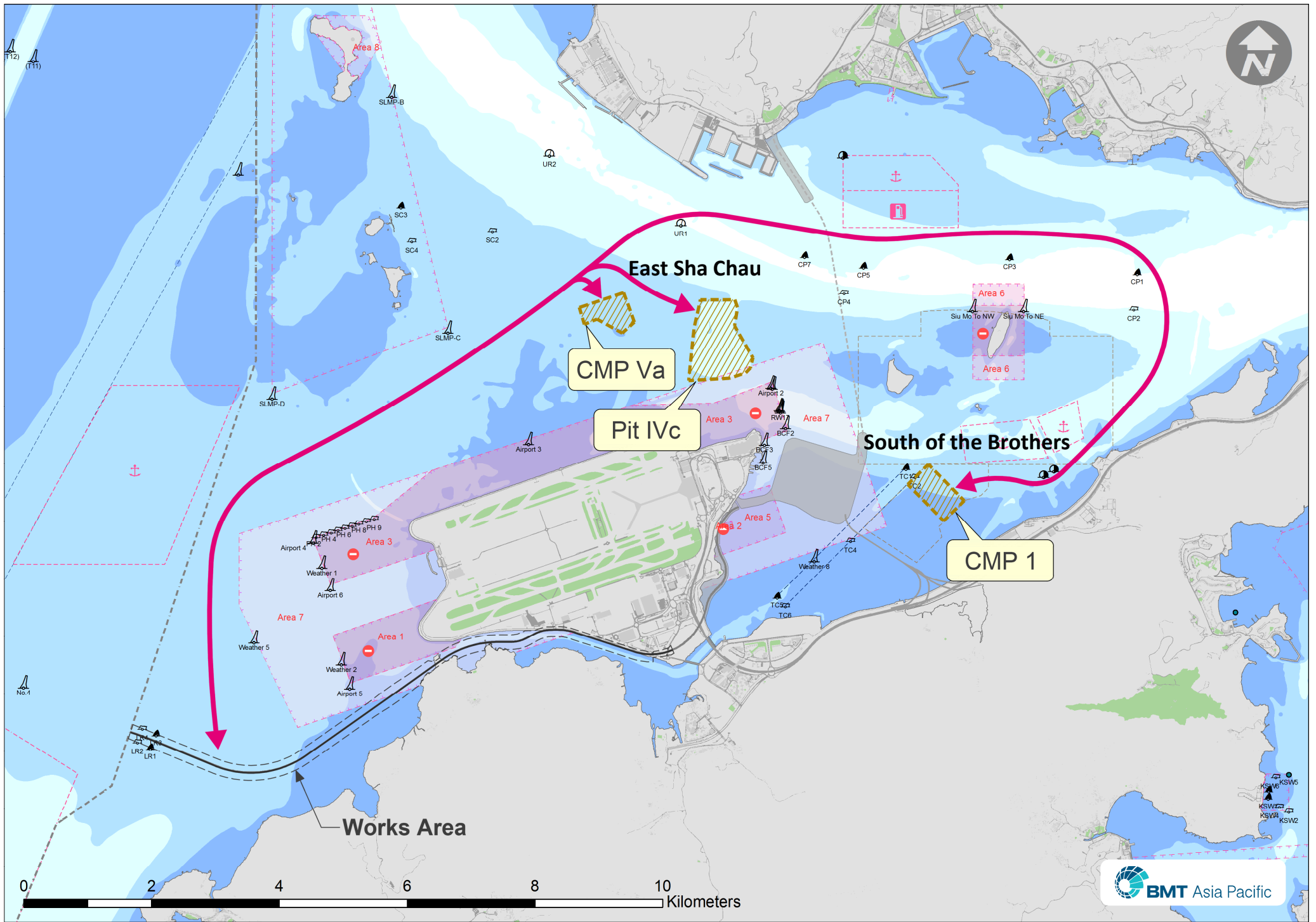


Figure 7: Marine Routes for Excavated Marine Sediment

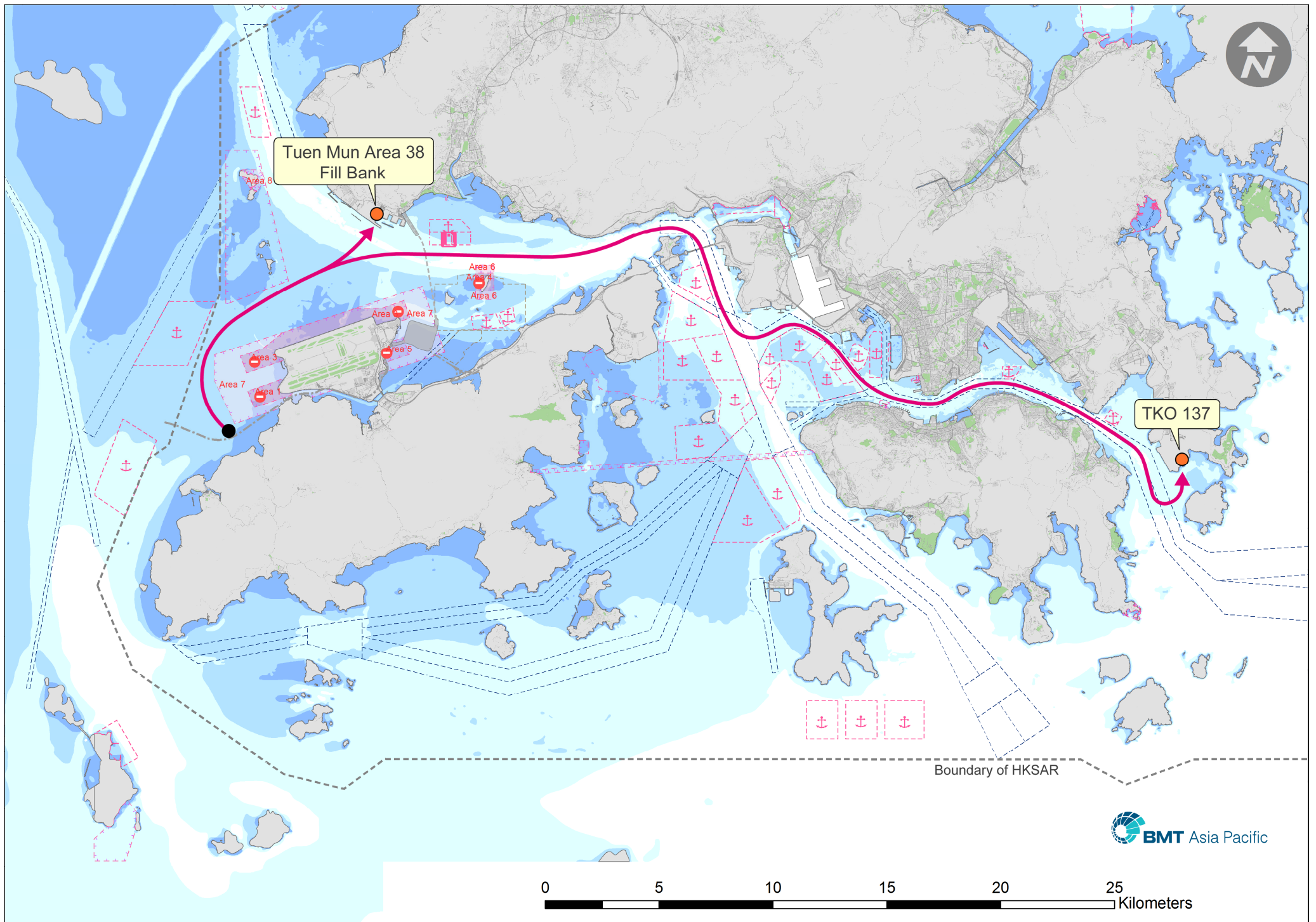


Figure 8: Marine Routes for inert construction waste, slurry and bentonite

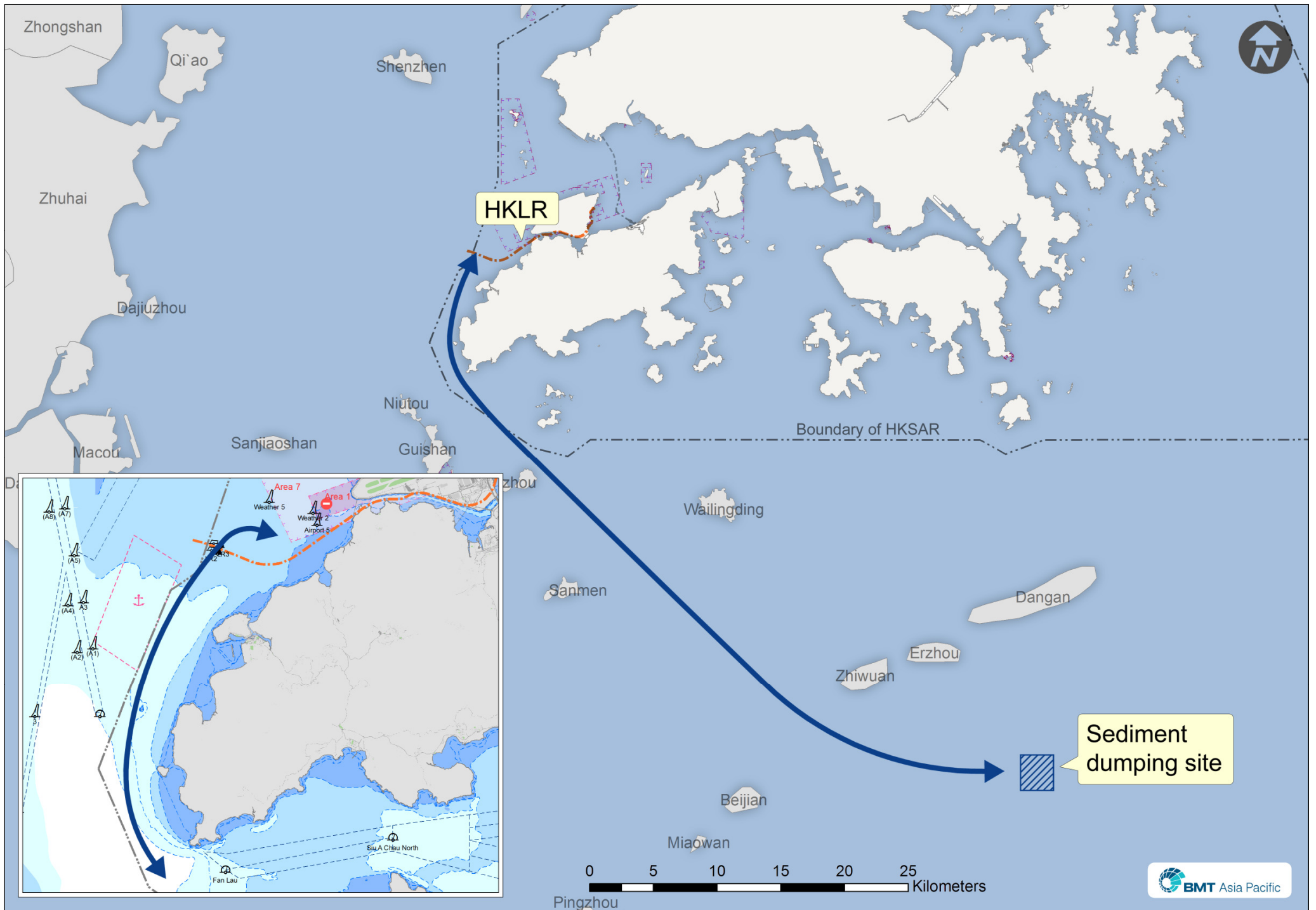


Figure 9: Marine Routes for Excavated Marine Sediment to Mainland China